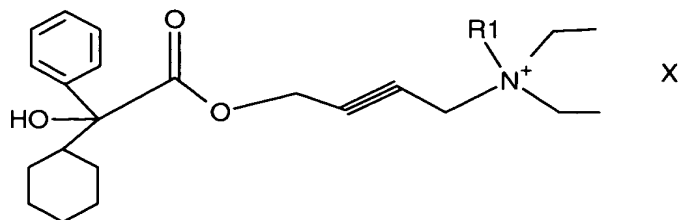


We claim:

1. A quaternary ammonium compound of formula I



and any stereoisomers thereof, wherein

- 5  $R_1$  is selected from  $C_1$ - $C_6$  alkyl,  $-CH_2-(C_1-C_4$  alkenyl), and  $-CH_2-(C_1-C_6$  alkynyl), each of which is optionally substituted with a group selected from phenyl,  $C_1$ - $C_4$  alkoxy, and hydroxyl; and

$X$  represents an anion of a pharmaceutically acceptable acid.

- 10 2. The compound of claim 1, wherein  $X$  is selected from the group consisting of the anions of the following acids: tartaric, hydrochloric, hydrobromic, hydroiodic, sulfuric, phosphoric, nitric, citric, methanesulfonic,  $CH_3-(CH_2)_n-COOH$  where  $n$  is 0-4,  $HOOC-(CH_2)_n-COOH$  where  $n$  is 1-4,  $HOOC-CH=CH-COOH$ , and benzoic.

- 15 3. The compound of claim 1, wherein  $X$  is selected from the group consisting of iodide, bromide, and chloride.

4. The compound of claim 1, wherein  $X$  is iodide.

- 20 5. The compound of claim 1, wherein  $X$  is bromide.

6. The compound of claim 1, wherein  $X$  is chloride.

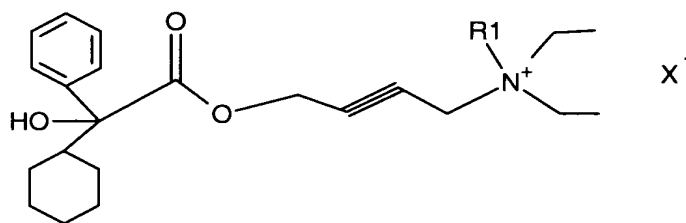
7. The compound of claim 1, wherein  $R_1$  is methyl.

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8. A compound 4-(diethylmethylaminium)-2-butynyl alpha phenyl cyclohexane glycolate iodide.

9. A pharmaceutical composition comprising a therapeutically effective amount

of a quaternary ammonium compound of formula I



and any stereoisomers thereof, wherein

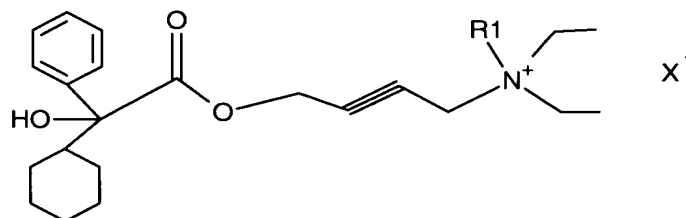
- 5  $R_1$  is selected from  $C_1$ - $C_6$  alkyl,  $-CH_2-(C_1-C_4$  alkenyl), and  $-CH_2-(C_1-C_6$  alkynyl), each of which is optionally substituted with a group selected from phenyl,  $C_1$ - $C_4$  alkoxy, and hydroxyl; and

$X$  represents an anion of a pharmaceutically acceptable acid.

- 10 10. The pharmaceutical composition of claim 9, wherein the pharmaceutical composition further comprises a suitable pharmaceutical carrier.

11. The method of treating a mammal for asthma, Chronic Obstructive Pulmonary Disease, allergic rhinitis, and infectious rhinitis, comprising:

- 15 administering a therapeutically effective amount of a quaternary ammonium compound of formula I, having the structure



and any stereoisomers thereof, wherein

- 20  $R_1$  is selected from  $C_1$ - $C_6$  alkyl,  $-CH_2-(C_1-C_4$  alkenyl), and  $-CH_2-(C_1-C_6$  alkynyl), each of which is optionally substituted with a group selected from phenyl,  $C_1$ - $C_4$  alkoxy, and hydroxyl; and

$X$  represents an anion of a pharmaceutically acceptable acid.